

a continuously flexible riser part connected, at one end, to the point located below the surface, and

a rigid riser part connected to the flexible riser part at one end and to the floating support at the second end thereof,

said rigid riser part having a length at least equal to half the water depth, and further including a catenary anchor system applied to the rigid riser part in the vicinity of the junction or a connector between the flexible riser part and the rigid riser part,

wherein the pipe is an injection pipe or line and characterized in that the rigid riser part is connected to a source of fluid to be injected and the flexible riser part is connected to a point where the fluid is to be injected.

13) (twice amended) A method of designing a pipe for great water depths allowing transfer of a fluid between a floating support and a point located below and at a distance from the water surface, the pipe comprising at least one flexible riser part connected, at one end, to the point located below the surface, and at least one rigid riser part connected to the flexible riser part at one end and to the floating support at the second end thereof, said rigid riser part having a length at least equal to half the water depth, and a catenary anchor system applied to the rigid riser part in the vicinity of the junction or a connector between the flexible riser part and the rigid riser part and for use in a body of water that exerts stresses on the pipe and the floating support due to wave motion, current and wind, the stresses thereby causing motions in the pipe and/or the floating support, and wherein the flexible riser part will have a definable internal pressure resulting from the conveying of the particular fluid, a

definable external pressure resulting from the water depth, a definable maximum traction resulting from stresses from the body of water, and a definable maximum allowable curvature, resulting from the composition of the flexible riser part, and wherein the rigid riser part has a defined holding means wherein it can be connected inside or on an edge of the floating member without coming into contact with the floating member, and wherein the rigid riser part has a defined diameter, and wherein the rigid riser part is subject to stresses generated by the weight of the pipe, the suspended weight of the flexible part, hydrodynamic strains, strains induced by displacements of the floating support, inside pressures and outside pressures,

the method comprising the steps of

- A) defining the flexible riser part by the steps of
 - a) determining extreme motions that the floating support would be subjected to in the body of water and assuming that extreme motions at an end of the flexible riser part where it is connected to the rigid riser part are substantially identical to the extreme motions of the floating support, and
 - b) selecting a point (Ph) along a vertical axis that coaxial to the axis that the rigid riser part will have when the rigid riser part is connected to the floating support, wherein the first point (Ph) is closer to the bottom of the body of water than to the top of the body of water and determining whether the point (Ph) can serve as the location where the flexible riser part is connected to the rigid riser part, the determining taking into account the extreme motions that the end of the flexible riser part where it is connected to the rigid riser part would be subjected to, as determined by step (a), and further taking into account the inside pressure, the exterior pressure, the nature of the fluid, the maximum traction of the flexible riser part and the

maximum allowable curvature, wherein, if point (Ph) cannot serve as the location where the flexible riser part is connected to the rigid riser part, the step (b) is repeated with one or more additional points, until a point is found that can serve as the location where the flexible riser part is connected to the rigid riser part,



- B) defining the rigid riser part by the steps of
 - a) selecting the length of the rigid riser part so that the length is substantially equal to the value of a distance, under equilibrium conditions, between the upper end of the flexible riser and the holding means, so that length of the rigid riser part is at least equal to half the depth of the water depth,
 - b) selecting the thickness of the rigid riser part by taking into account stresses generated by the weight of the pipe, the suspended weight of the flexible riser part, hydrodynamic strains, strains induced by displacements of the floating support, inside pressures and outside pressures, and
 - c) checking that the rigid riser part when the rigid riser part is connected by the holding means inside or on an edge of the floating support, the rigid riser part does not come into contact with the floating support, and wherein if the rigid riser part does contact the floating support, steps A) and B) are repeated with different values for the point (Ph).


Please add the following new Claims 17 - 20:

--17. A pipe for great water depths allowing transfer of a fluid between a floating support and a point located below and at a distance from the water surface, the pipe comprising:

at least one flexible riser part connected, at one end, to the point located below the surface, and

at least one rigid riser part connected to the flexible riser part at one end and to the floating support at the second end thereof,

said rigid riser part having a length at least equal to half the water depth, and a catenary anchor system applied to the rigid riser part in the vicinity of the junction or a connector between the flexible riser part and the rigid riser part.

18) The pipe of Claim 17, wherein said pipe further comprises heat insulation means placed on at least the rigid riser part and/or the flexible riser part.

19) The pipe of Claim 17 wherein said pipe is characterized in that said rigid riser part is held up to the floating support by holding means allowing said pipe to be tensioned under the effect of its own weight.

20) The pipe of Claim 17 wherein the pipe is an injection pipe or line and wherein the rigid riser part is connected to a source of fluid to be injected and the flexible riser part is connected to a point where the fluid is to be injected.--